EXHIBIT 2

FILED UNDER SEAL

JEDEC STANDARD

DDR4 SDRAM

JESD79-4C

(Revision of JESD79-4B, June 2017)

JANUARY 2020

JEDEC SOLID STATE TECHNOLOGY ASSOCIATION

4.27 Self refresh Operation (Cont'd)

If the bit is enabled then the DRAM aborts any ongoing refresh and does not increment the refresh counter. The controller can issue a valid command not requiring a locked DLL after a delay of tXS_abort.
Upon exit from Self-Refresh, the DDR4 SDRAM requires a minimum of one extra refresh command before it is put back into Self-Refresh Mode. This requirement remains the same irrespective of the setting of the MRS bit for self refresh abort.

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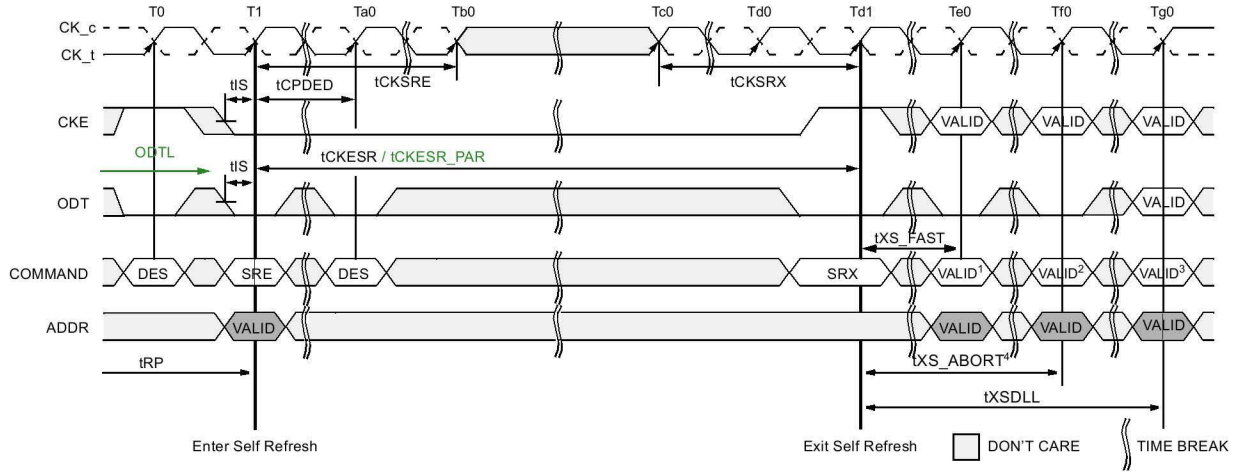

NOTE 1 Only MRS (limited to those described in the Self-Refresh Operation section). ZQCS or ZQCL command allowed.
NOTE 2 Valid commands not requiring a locked DLL
NOTE 3 Valid commands requiring a locked DLL
NOTE 4 Only DES is allowed during tXS_ABORT

Figure 160 — Self-Refresh Entry/Exit Timing

4.27.1 Low Power Auto Self Refresh

DDR4 devices support Low Power Auto Self-Refresh (LP ASR) operation at multiple temperatures ranges (See temperature table below). Mode Register MR2 – descriptions

Table 86 — MR2 definitions for Low Power Auto Self-Refresh mode

A6	A7	Self-Refresh Operation Mode
0	0	Manual Mode – Normal operating temperature range
0	1	Manual Mode – Extended operating temperature range
1	0	Manual Mode – Lower power mode at a reduced operating temperature range
1	1	ASR Mode – automatically switching between all modes to optimize power for any of the temperature ranges listed above

Auto Self Refresh (ASR)
DDR4 DRAM provides an Auto Self-Refresh mode (ASR) for application ease. ASR mode is enabled by setting the above MR2 bits A6=1 and A7=1. The DRAM will manage Self Refresh entry through the supported temperature range of the DRAM. In this mode, the DRAM will change self-refresh rate as the DRAM operating temperature changes, lower at low temperatures and higher at high temperatures.

Manual Modes
If ASR mode is not enabled, the LP ASR Mode Register must be manually programmed to one the three self-refresh operating modes listed above. In this mode, the user has the flexibility to select a fixed self-refresh operating mode at the entry of the self-refresh according to their system memory temperature conditions. The user is responsible to maintain the required memory temperature condition for the mode selected during the self-refresh operation. The user may change the selected mode after exiting from self refresh and before the next self-refresh entry. If the temperature condition is exceeded for the mode selected, there is risk to data retention resulting in loss of data.